# Science Overview Cycle A

## 2024 -2025

At Edenham, as Science is a core subject, we teach lessons discreetly (not necessarily connected to the class topic for the term). Science is taught during weekly lessons with EYFs and Key Stage 1 children receiving at least thirty-six hours per year and Key Stage Two at least forty-five hours per year. Our curriculum (the knowledge children will learn) is split into substantive knowledge (Biology Chemistry Physics) and disciplinary knowledge (scientific methods, apparatus and techniques, data analysis and presentation and how Science uses evidence to develop explanations). This will ensure that all pupils develop scientific knowledge and conceptual understanding, work scientifically, and develop higher-order thinking skills. We use different contexts to maximise pupils' engagement with and motivation to study Science by actively encouraging children to work both independently and with others in practical ways, developing secure subject knowledge, skills and vocabulary at an age-appropriate level as seen in the progression documents below.

## EYFS

EYFS children will be guided in their learning through four overarching principles: for a unique child, positive relationships, enabling environments and learning and development. They will build a good foundation for igniting their curiosity and enthusiasm for learning, forming relationships and thriving at school through the Seven Areas of Learning:

- Prime Areas of Communication and Language, Physical Development and Personal, Social and Emotional Development.

- Specific Areas of Literacy, Mathematics, Understanding the World and Expressive Arts and Design.

The Early Years Foundation Stage Curriculum supports children's understanding of Science by following the guidelines outlined in the 'Understanding the World – The Natural World' within the EYFS framework:

- Children know about similarities and differences concerning places, objects, materials and living things. They talk about the features of their immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.

In the EYFS children use a range of 'Characteristics of Effective Learning' in their independent learning. These can be seen as complementing 'Working Scientifically' by playing and exploring (engagement), active learning (motivation) and creating and thinking critically (thinking).

| Knowledge | Skills | Why this? Why now? | Vocabulary | Key Scientist |
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| **Term 1 and 2-What makes me? – Healthy Me** | | | | |
| **Informed from the Early Learning Goals:**<br>Term 1:<br>- Describe how people are familiar to them.<br>- Learn how to take care of themselves.<br>- Explore the natural world around them, making observations and drawing pictures of animals.<br>- Children know about similarities and differences in relation to living things.<br>- Be able to identify different parts of their body.<br>- Be able to show care and concern for living things.<br>Term 2:<br>- Explore animals in the natural environment.<br>- Name and describe animals that live in different habitats.<br>- Describe different habitats.<br>- Can talk about things they have observed, including animals.<br><br>**Key learning for children:**<br>Term 1:<br>- I know and can identify body parts, including the head, arm, leg, knee, feet, back, stomach, shoulders and elbows.<br>- I know that a face is made up of eyes, nose, lips, cheeks, and ears.<br>- I know that my body is similar to someone else's body, e.g., we both have hair.<br>- I know that my body is different from someone else's body, e.g. I have blonde hair and they have brown hair.<br>Term 2:<br>- I know that a habitat is the home of an animal.<br>- I know that the following are examples of habitats: desert, forest, pond, polar regions and the sea.<br>- I know what a given habitat (desert, forest, pond, polar regions and the sea) looks like.<br>- I know animals that live in the following habitats: desert, forest, pond, polar regions and the sea. | **Working Scientifically Enquiries:**<br>- Identify and Classify – How can we organise all the zoo animals? What are the names for all the parts of our bodies?<br>- Observation Overtime – How does my height change over the year?<br>- | - Why this? We begin with the body and senses as the children have the experience of them but may not be able to explain. We work on extending their vocabulary to be able to talk about their observations. The children have the opportunity to use their senses to explain what they see, feel, and hear in relation to the world around them.<br>- Why now? At the start of the year, pupils will be learning more about each other. This is a chance for them to begin to understand the similarities and differences that exists within the class. It also links in with EYFS' big question 'What makes me, me? | Term 1:<br>hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman<br>Term 2:<br>names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, | • Conservationist: works for the protection and preservation of living things and the environment.<br>• Farmer: grows crops and raises animals for food.<br>• Marine biologist: studies living things in oceans.<br>• Mammologist: studies mammals.<br>• Naturalist: scientist who studies the natural world.<br>• Vet: looks after unwell animals.<br>• Wildlife filmmaker: creates films and documentaries about wildlife.<br>• Wildlife photographer :takes pictures of animal |
| **Term 3-What was lifelike once upon a time? – Materials** | | | | |

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| **Informed from the Early Learning Goals:**<br>- Explore a range of materials, including natural materials.<br>- Make objects from different materials, including natural materials.<br>- Observe, measure and record how materials change when heated and cooled.<br>- Compare how materials change over time and in different materials.<br>- Understand some important processes and changes, including the changing states of matter.<br>- Know about similarities and differences in relation to objects.<br>- Talk about the features of their immediate environment and how environments might vary from one another in relation to the objects within them.<br>- Ask questions about the objects they use.<br>- Manipulates materials to achieve a planned effect.<br><br>**Key learning for children:**<br>- I know the names of materials including wood, plastic, metal, brick, rock, paper and cardboard.<br>- I know objects that are made out of the materials: wood, plastic, metal, brick, rock, paper and cardboard.<br>- I can say materials in the classroom that are used for different roles.<br>- I can explain why I would use material for a specific purpose. | **Working Scientifically Enquiries:**<br>- Competitive tests – Which materials are the most flexible? Which material would be best for the roof of the little pig's house?<br>- Identify and Classify – We need to choose a material to make an umbrella. Which materials are waterproof? | - Why this? Pupils have the opportunity to explore the materials within their classroom.<br>- Why now? This unit allows the pupils to make links between their observations of materials and the traditional stories they have been exposed to. It also links in with EYFS' big question 'What was lifelike once upon a time?' | - ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back | . **Architect**: uses art and science to design buildings that are strong.<br>. **Builder**: builds structures.<br>. **Materials scientist**: researches structures and properties of materials. |
| **Term 4-What is happening outside my window? - Seasonal Change** | | | | |
| **Informed from the Early Learning Goals:**<br>- Play and explore outside in all seasons and different weather.<br>- Explore how wind can move objects.<br>- Observe living things throughout the year.<br>- Explore shadows.<br>- Explore rainbows.<br>- Listen to sounds outside and identify the source.<br>- Explore the natural world around them.<br>- Make comments and ask questions about the place they live in or the natural world.<br>- Develop an understanding of seasonal change.<br>- Observe and explain why certain things may occur (e.g., leaves falling off trees, weather changes).<br>- Looked closely at similarities, differences, patterns, and change.<br><br>**Key learning for children:**<br>- I know the names of the 4 seasons.<br>- I know the different types of weather we get in the 4 seasons.<br>- I can make comparisons between winter and summer.<br>- I know that people live differently in winter compared to summer. | **Working Scientifically Enquiries:**<br>- Competitive tests – In which season does it rain the most?<br>- Pattern Seeking – Does the wind always blow the same way? | - Why this? Pupils have the opportunity to explore what happens to the local environment as the season changes.<br>- Why now? This unit allows for comparison by observing what is different in the world now and what can now be seen in this season compared to the others. It also links in with EYFS' big question 'What is happening outside my window?' | - spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers | . **Climatologist**: studies climate patterns.<br>. **Horticulturist**: an expert in garden cultivation and management.<br>. **Meteorologist**: studies and predicts the weather. They collect data about the atmosphere from weather stations and satellites.<br>. **Park ranger**: maintains parks |
| **Term 5 - Why is water wonderful? – Plants** | | | | |
| **Informed from the Early Learning Goals:**<br>- Make observations of plants.<br>- Know some names of plants, trees and flowers.<br>- May be able to name and describe different plants, trees and flowers.<br>- Explore how objects can move in water.<br>- Show some care for the world around them.<br>- Explore the natural world around them, making observations and drawing pictures of plants.<br><br>**Key learning for children:**<br>- I can name a sunflower, a rose, a daisy, an oak tree, a horse chestnut tree, and an ash tree.<br>- I know that flowers have leaves, flowers, petals and roots. | **Working Scientifically Enquiries:**<br>- Identify and Classify – Which tree is this? Which plant is this?<br>- Research - Are there plants that are in flower in every season? What are they? | - Why this? Pupils have the opportunity to explore what is within the local environment.<br>- Why now? This unit allows children the opportunity to begin to name plants and make observations about what is found within the local environment. It also links in with EYFS' big question 'Why is water wonderful?' | - Names of plants they see, leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, observe, grow, | • **Park ranger** :maintains parks<br>• **Farmer** :grows crops and raises animals for food<br>• **Gardener** :creates and maintains gardens and green spaces<br>• **Tree surgeon** :plants, maintains and manages trees<br>• **Forester** :works to deliver wood products to the market |

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| - I know that trees have trunks and branches.<br>- I know that plants start as bulbs or seeds.<br>- I know we have to take care of plants in order for them to grow. | | | | |
| **Term 6-Where could I travel to? - Gravity** | | | | |
| **Informed from the Early Learning Goals:**<br>- Explore how to change how things work.<br>- Listen to sounds outside and identify the source.<br>- Make sounds.<br>- Learn about the Earth, Sun, Moon, planets and stars.<br>- Learn about Space travel.<br>- Explore the natural world around them.<br>- Make comments and asked questions about the place they live in or the natural world.<br>- Develop an understanding of seasonal change.<br>- Looked closely at similarities, differences, patterns, and change.<br><br>**Key learning for children:**<br>- I know the name of the planet I live on.<br>- I know that some environments are different to the one in which I live.<br>- I know that our solar system is made up of the Sun and all of the smaller objects including planets and moons that move around it.<br>- I know the names of other planets, including Mercury, Venus, Mars, Jupiter, Saturn, Uranus and Neptune.<br>- I know that space has no gravity. | **Working Scientifically Enquiries:**<br>- Identify and Classify – How could you organise all the objects in the solar system into groups?<br>- Pattern Seeking – Does the weight of an object affect how fast it falls to the ground? | - Why this? Pupils will be introduced to the fact that Earth, where they live, is a planet and that there are other planets. Why now? This unit also links in with EYFS' big question 'Where could I travel to?' | - Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float | • **Astronomer:** studies the universe beyond earth, including stars and planets.<br>• **Astrophysicist:** studies the physics of space and objects in space.<br>• **Astronaut:** travels to space to carry out research.<br>• **Astronautical engineer:** work with cutting-edge technology and international companies to design, develop, maintain and tests the performance of satellites and space vehicles.<br>• **Astrobiologists:** study how microbes might live and behave in outer space, and what this might mean for life on other planets.<br>• **Astrophysicist:** studies the physics of space and objects in space.<br>• **Mechanical engineer:** helps to design, analyse, make and maintain mechanical systems such as spacecraft, aircraft, trains and cars.<br>• **Physicist:** studies physics. |

## KS1

| Knowledge | Skills | Why this? Why now? | Vocabulary | Key Scientist |
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| **Term 1- Animals including Humans (Year 1 NC): What makes us human?** | | | | |
| **National Curriculum Statements:**<br>- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.<br><br>**Key learning for children:**<br>- I know that a human is an example of an animal and a mammal.<br>- I know that we have 5 senses: touch, taste, smell, sight and hearing.<br>- I can name different body parts linked to my head including eyes, ears, nose, and mouth.<br>- I know which sense each of those body parts is associated with.<br>- I know different parts of arms including elbows, wrists and hands.<br>- I can talk about different parts of my legs including knees, ankles and feet.<br>- I can compare and describe differences in my features (eye, hair, skin colour, etc.) to the features of others.<br>- I know that humans have many similarities but also some differences.<br>- I know that Linda Buck studied the answer to the question: How does our sense of smell work? | **Working Scientifically Enquiries:**<br>- Competitive tests – Is our sense of smell better when we can't see?<br>- Identify and Classify –What are the names of all the parts of our bodies?<br>- Observation Overtime – How does my height change over the year?<br>**Working Scientifically Skills:**<br>- Ask their own simple questions about what they notice and recognising that they can be answered in different ways.<br>- Identifying and classifying<br>- Using their observations and ideas to suggest answers to questions.<br>- **Ongoing:** Be curious and ask questions about what they notice / asking simple questions and recognising that they can be answered in different ways<br>- **Ongoing:** Begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. | - Why this? Pupils have the opportunity to focus on Humans and what makes us special. Children will be able to spend time making links between body parts and the associated sense.<br>- Why now? This unit builds upon learning from EYFS where children explored the natural world around them. | - sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow. | - Linda Buck (sense of smell) |
| **Term 2-Animals including Humans (Year 1 NC): How can we group animals?** | | | | |
| **National Curriculum Statements:**<br>- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>- Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)<br><br>**Key learning for children:**<br>- I can name different fish including goldfish and clownfish. | **Working Scientifically Enquiries:**<br>- Identify and Classify – Classify animals based on what they eat. Classify animals based on the children's criteria.<br>- Research – What do animals eat?<br>**Working Scientifically Skills:**<br>- Ask their own simple questions about what they notice and recognising that they can be answered in different ways.<br>- Identifying and classifying<br>- Using their observations and ideas to suggest | - Why this? Pupils have the opportunity to explore animals found in their local environment but also further afield. This will provide them with a good breadth of knowledge about common animals. learning in a relevant context.<br>- Why now? This unit builds upon learning from the last term in which they can now build upon | - Amphibians, birds, fish, mammals, reptiles, carnivores, herbivores, omnivores. | - Chris Packham (Animal Conservationist) |

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| - I can name different mammals including dogs, tigers, whales, and humans.<br>- I know that mammals can be found on land and in the ocean.<br>- I can name reptiles including lizards, crocodiles, tortoises, and turtles.<br>- I can name different birds including parrots, robins, and pigeons.<br>- I can name different amphibians including frogs and toads.<br>- I know the structure of these animals and can compare similarities and differences using these.<br>- I know what herbivore, carnivore and omnivore are and can name examples of herbivores (including cows, sheep, rabbits and giraffes), carnivores (including polar bears, lions, eagles and wolves) and omnivores (including foxes, hedgehogs and humans).<br>- I know that Chris Packham works as a conservationist and helps to support the rebuild of habitats and reintroduce extinct animals and plants. | answers to questions.<br>- Gathering and recording data to help in answering questions.<br>- **Ongoing:** Be curious and ask questions about what they notice /asking simple questions and recognising that they can be answered in different ways.<br>- **Ongoing:** Begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. | their understanding of animals by comparing humans to other animals, including other mammals. | | |
| **Term 3 and 4- Everyday Materials (Year 1 NC): What are the things I use made from?** | | | | |
| **National Curriculum Statements:**<br>- Distinguish between an object and the material from which it is made.<br>- Identify and name a variety of everyday materials, including wood, metal, plastic, glass, water and rock,<br>- Describe the simple physical properties of a variety of everyday materials.<br>- Compare and group together a variety of everyday materials based on their simple properties.<br><br>**Key learning for children:**<br>- I know what is meant by the term material.<br>- I know what is meant by the term object.<br>- I can name objects that are made of glass, wood, plastic, metal and rock.<br>- I know how to describe the characteristics of different materials.<br>- I can say which material would best suit different needs.<br>- I know that Charles Macintosh was a Scottish chemist and the inventor of the modern waterproof raincoat.<br>- I know that John Macadam was a Scottish civil engineer and road builder in the 18th century who invented a revolutionary new road-building technique. | **Working Scientifically Enquiries:**<br>- Competitive tests – Which materials are the strongest? Which materials are the most absorbent?<br>- Identify and Classify – Which materials are shiny and which are dull?<br>- Research - Which materials can be recycled?<br><br>**Working Scientifically Skills:**<br>- Ask their own simple questions about what they notice and recognising that they can be answered in different ways.<br>- Observing closely, using simple equipment<br>- Performing simple tests<br>- Identifying and classifying<br>- Using their observations and ideas to suggest answers to questions.<br>- Gathering and recording data to help in answering questions.<br>- **Ongoing:** Be curious and ask questions about what they notice /asking simple questions and recognising that they can be answered in different ways<br>- **Ongoing:** Begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. | - Why this? Pupils have the opportunity to apply the knowledge they gain throughout this unit to a project as they become more familiar with the names and properties of different materials encountered. The pupils will be able to perform simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for a waterproof coat? ...for a bookshelf? ...the three little pigs' homes?'<br>- Why now? This unit builds upon prior learning from EYFS in which they get to build upon their observations of materials by exploring a range of materials in the classroom. | - object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through | - Term 3: Charles Macintosh (Waterproof coat)<br>- Term 4: John MacAdam (roads) |
| **Term 5-Seasonal Change (Year 1 NC): What is it like in Spring and Summer?** | | | | |
| **National Curriculum Statements:**<br>- Observe changes across the four seasons.<br>- Observe and describe weather associated with the seasons and how day length varies.<br><br>**Key learning for children:**<br>- I know that we have 4 main seasons.<br>- I can describe where these seasons come in our year.<br>- I know that the daylight hours are longer in Spring and Summer.<br>- I know that in Summer the temperature increases.<br>- I know that in Summer it can still rain even though it is warm.<br>- I can name the different types of weather we see in Spring and Summer.<br>- I know that Holly Green is a meteorologist who collects and studies data from the atmosphere and oceans to make weather forecasts. | **Working Scientifically Enquiries:**<br>- Competitive tests – In which season does it rain the most?<br>- Observation Overtime – How does the oak tree change over the year?<br>- Research - Are there plants that are in flower in every season? What are they?<br><br>**Working Scientifically Skills:**<br>- Ask their own simple questions about what they notice and recognising that they can be answered in different ways.<br>- Performing simple tests<br>- Using their observations and ideas to suggest answers to questions.<br>- Gathering and recording data to help in answering questions.<br>- **Ongoing:** Be curious and ask questions about what they are notice/asking simple questions and | - Why this? Pupils have the opportunity to observe and talk about changes seen throughout the seasons of Spring and Summer.<br>- Why now? This unit builds upon prior learning from EYFS and allows the pupils to gain a greater understanding of the seasons of Spring and Summer by using the weather stations they made as part of their DT projects from Term 4 of this cycle. In KS1 Cycle B, children will gain a greater understanding of the seasons of Autumn and Winter. | - Weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length | - Holly Green (Meteorologist) |

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| | recognising that they can be answered in different ways<br>- **Ongoing:** Begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. | | | |
| **Term 6-Plants (Year 1 NC): How many types of plant are there?** | | | | |
| **National Curriculum Statements:**<br>- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees:<br>- Identify and describe the basic structure of a variety of common flowering plants.<br>- Identify and name the roots, trunk, branches and leaves of trees.<br><br>**Key learning for children:**<br>- I know that plants have leaves, flowers, petals, and roots.<br>- I know that trees have trunks and branches.<br>- I know that deciduous trees lose their leaves in Autumn.<br>- I know that evergreen trees keep their leave all year round.<br>- I know the names of different deciduous trees including Oak, Birch and Willow<br>- I know the names of different evergreen trees including Conifer, Yew and Holly.<br>- I know the names of different trees within our school.<br>- I know that Agnes Arber was a Botanist who conducted research on the structure of flowers. | **Working Scientifically Enquiries:**<br>- Identify and Classify – How can we sort the leaves that we collected on our walk?<br>- Pattern Seeking – Is there a pattern in where we find moss growing in the school grounds?<br>- Research - What are the most common British plants and where can we find them?<br><br>**Working Scientifically Skills:**<br>- Ask their own simple questions about what they notice and recognising that they can be answered in different ways.<br>- Observing closely, using simple equipment, for example, a magnifying glass.<br>- Identifying and classifying<br>- Using their observations and ideas to suggest answers to questions.<br>- Gathering and recording data to help in answering questions.<br>- **Ongoing:** Be curious and ask questions about what they notice /asking simple questions and recognising that they can be answered in different ways<br>- **Ongoing:** Begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. | - Why this? Pupils have the opportunity to name plants found in their local environment and answer questions about plants growing in their habitats. They will make links with previous learning about seasonal changes to explore the differences between deciduous and evergreen trees.<br>- Why now? This unit builds upon prior learning from EYFS in which pupils made observations about plants found within their local environment. | - leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud<br>- Names of trees in the local area, names of garden and wild flowering plants in the local area | - Agnes Arber (Botanist) |

## Lower KS2

| Knowledge | Skills | Why this? Why now? | Vocabulary | Key Scientist |
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| **Term 1 - Living Things and Their Habitats (Year 4 NC): How can the environment affect different groups of animals?** | | | | |
| **National Curriculum Statements:**<br>- Recognise that living things can be grouped in a variety of ways.<br>- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.<br>- Recognise that environments can change and that this can sometimes pose a danger to living things.<br><br>**Key learning for children:**<br>- I know that there are different styles of habitat.<br>- I can talk about different habitats in my local environment.<br>- I know that classification involves grouping animals based on similar characteristics.<br>- I know that vertebrates are animals with a backbone.<br>- I know that invertebrates are animals without a backbone.<br>- I can name different habitats around the world.<br>- I know that habitats change depending on the environment and climate.<br>- I know that humans pose a danger to different habitats.<br>- I know that habitats are changing, and animals are having to adapt to this.<br>- I know that Cindy Looy is a plant ecologist who investigates the response of Palaeozoic plants and plant communities to environmental change. | **Working Scientifically Enquiries:**<br>- Identify and Classify – How would you group these plants and animals based on what habitat you would find them in?<br>- Observation Overtime – How does the school pond change over the year?<br>- Pattern Seeking – Which habitat do worms prefer – where can we find the most worms?<br>- Research - How are the animals in Australia different to the ones that we find in Britain? How does the habitat of the Arctic compare with the habitat of the rainforest?<br><br>**Working Scientifically Skills:**<br>- Gathering, recording, classifying, and presenting data in a variety of ways to help in answering questions.<br>- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.<br>- Identifying differences, similarities or changes related to simple scientific ideas and processes.<br>- **Ongoing:** Ask their own questions about what they observe.<br>- **Ongoing:** Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. | - Why this? Pupils have the opportunity to start to look at the human impact on environments, starting with exploring the positive and negative impacts in the local area.<br>- Why now? This unit builds upon prior learning on grouping / classification from KS1. It introduces the concept of adaptation ready for Upper KS2 Cycle B. | - Classification, classification keys, environment, habitat, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, positive, negative, nature reserves, deforestation. | - Cindy Looy (Environmental Change and Extinction) |
| **Term 2 – Animals, including Humans (Year 3 NC): How do the systems inside our body work to make a healthy human?** | | | | |

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| **National Curriculum Statements:**<br>- Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their food; they get their nutrition from what they eat.<br>- Identify that humans and some other animals have skeletons and muscles for support, protection, and movement.<br><br>**Key learning for children:**<br>- I know what a skeleton is.<br>- I know that our skeleton is used for 3 main reasons: protection, movement, and support.<br>- I know that tendons connect muscles to bones.<br>- I know that ligaments connect bones to bones.<br>- I know that our skeleton can be broken and needs care.<br>- I know which organs our skeleton protects.<br>- I know the roles that food, water, and air play in our survival.<br>- I know what the word diet means.<br>- I know that there are five different food groups and seven different nutrients.<br>- I know that animals get nutrients from what they eat.<br>- I know why a balanced diet is important.<br>- I know whether different foods are considered healthy or unhealthy and why.<br>- I know what will happen if I eat too many unhealthy foods.<br>- I know that Marie Curie was a physicist who discovered the elements radium and polonium which are now used to allow for more accurate and stronger x-rays. | **Working Scientifically Enquiries:**<br>- Competitive tests – How does the skull circumference of a girl compare with that of a boy?<br>- Observation Overtime – How does our skeleton change over time? (From birth to death)<br>- Research - Why do different types of vitamins keep us healthy and which foods can we find them in?<br><br>**Working Scientifically Skills:**<br>- Setting up simple practical enquiries, comparative and fair tests<br>- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables<br>- Identifying differences, similarities or changes related to simple scientific ideas and processes.<br>- Using straightforward scientific evidence to answer questions or to support their findings.<br>- **Ongoing:** Ask their own questions about what they observe.<br>- **Ongoing:** Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. | - Why this? Pupils have the opportunity to develop their knowledge of the skeleton as well as making links with exercise using Fitness in PE as a basis. The pupils will continue to learn about the importance of a healthy diet.<br>- Why now? This unit builds upon prior learning from KS1 Cycle B with regards to what animals, including humans, eat by exploring the 7 nutrients that you can get from eating food from the 5 food groups that they have already learned about. It will also provide the pupils with a basic understanding as to who Marie Curie is which will help them within their Connections learning in Upper KS2 Cycle A. It also links in with Animals, including Humans from Lower KS2 Cycle B in which children learnt about what happens to | - Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax, | - Marie Curie (Radiation / X-Rays) |
| **Term 3 – Sound (Year 4 NC): How does sound travel?** | | | | |
| **National Curriculum Statements:**<br>- Know how sound is made associating some of them with vibrating.<br>- Know what happens to a sound as it travels from its source to our ears.<br>- Know the correlation between the volume of a sound and the strength of the vibrations that produced it.<br>- Know how sound travels from a source to our ears.<br>- Know the correlation between pitch and the object producing a sound.<br><br>**Key learning for children:**<br>- I know that sounds are caused by vibrations.<br>- I know that molecules in the air are vibrating and travel to my ears.<br>- I know that this causes tiny hairs in my ears to vibrate.<br>- I know these hairs are connected to nerves that send messages to the brain.<br>- I know that these vibrations travel through the air into my ears.<br>- I know that the pitch of a sound is how high or low the sound is.<br>- I know that the volume of sound is how loud the sound is.<br>- I know that the speed of sound is slower than the speed of light.<br>- I know that sound travels at different speeds through solids, liquids, and gases.<br>- I know that sounds will get fainter the further I am from the sound.<br>- I know that Aristotle wrote that “everything that makes a sound does so by the impact of something against something else, across a space filled with air”.<br>- I know that Aristotle pioneered the scientific method in ancient Greece. | **Working Scientifically Enquiries:**<br>- Competitive tests – How does the volume of a drum change as you move further away from it? How does the length of a guitar string/tuning fork affect the pitch of the sound?<br>- Identify and Classify – Which material is best to use for muffling sound in ear defenders?<br>- Research - Do all animals have the same hearing range?<br><br>**Working Scientifically Skills:**<br>- Setting up simple practical enquiries, comparative and fair tests<br>- Making systematic and careful observations and, where appropriate, taking accurate measurements<br>- Using standard units, using a range of equipment, including dataloggers.<br>- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.<br>- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables<br>- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.<br>- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.<br>- Identifying differences, similarities or changes related to simple scientific ideas and processes.<br>- Using straightforward scientific evidence to answer questions or to support their findings.<br>- **Ongoing:** Ask their own questions about what they observe.<br>- **Ongoing:** Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. | - Why this? Pupils have the opportunity to learn how sounds are made during this stand-alone unit. It will enable the children to write an explanation text within their English as to how sound is made. Children will have the opportunity to use data loggers.<br>- Why now? This unit builds upon prior learning from KS1 Cycle B about the uses of materials. Pupils will explore how materials of different sizes and thicknesses can affect the pitch and volume of sounds. | - Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation, amplitude, volume, ear, particles, instruments, wave. | - Aristotle (Sound Waves) |
| **Term 4 – Plants (Year 3 NC): How does each part of a plant fulfil its function?** | | | | |
| **National Curriculum Statements:**<br>- Identify and describe the functions of different parts of the | **Working Scientifically Enquiries:** | - Why this? Pupils have the opportunity to look at the | - Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, | - Jan Ingenhousz |

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| flowering plant: roots, stem/trunk/leaves and flowers.<br>- Explore the part flowers play in a flowering plant's life cycle, including pollination, seed formation and seed dispersal.<br>- Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants.<br>- Know the way in which water is transported between plants.<br><br>**Key learning for children:**<br>- I know that flowering plants have roots, stem/trunk leaves and flowers and the role they play in supporting the plant.<br>- I know where plants obtain the different things they need to survive.<br>- I know the impact of taking away one of the things plants need to survive.<br>- I know that water is moved through plants using transportation.<br>- I know the plants reproduce for themselves using seed dispersal.<br>- I know that pollination involves pollen being taken to the female part of the plant to help create seeds.<br>- I know that germination is the growth of a seed into a plant.<br>- I know that Jan Ingenhousz was a physician and scientist who discovered the role of light in photosynthesis. | - Identify and Classify – Classify flowers based on the children's own criteria (good to assess prior knowledge from Term 1)<br>- Observation Overtime – Observe celery (with roots and leaves) in coloured water. Observe white carnations (freshly cut) in coloured water.<br>- Pattern Seeking – Investigate what happens when conditions are changed (e.g., more water, change in temperature).<br>- Research - Research the functions of the parts of flowering pants. Research different methods of seed dispersal. Research different methods of pollination.<br><br>**Working Scientifically Skills:**<br>- Setting up simple practical enquiries, comparative and fair tests<br>- Making systematic and careful observations and, where appropriate, taking accurate measurements<br>- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.<br>- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables<br>- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.<br>- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.<br>- **Ongoing:** Ask their own questions about what they observe.<br>- **Ongoing:** Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. | relationship between the structure and functions of the parts of a plant. They will also learn about the importance of water.<br>- Why now? This unit builds upon prior learning from KS1 Cycle B where they looked at the parts of a plants as well as explored what plants needed to help them to grow. | transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, photosynthesis, | (Photosynthesis) |
| **Term 5 and 6 – Electricity (Year 4 NC): How does electricity travel?** | | | | |
| **National Curriculum Statements:**<br>- Identify common appliances.<br>- that run on electricity.<br>- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.<br>- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.<br>- Recognise that a switch opens and closes the circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.<br>- Know the difference between a conductor and an insulator; giving examples of each.<br>- Safety when using electricity.<br><br>**Key learning for children:**<br>- I know that electricity runs in a circuit.<br>- I know the circuit has to be complete in order for a component to light.<br>- I can name different parts of a circuit including wires, bulbs, cells, switches and buzzers.<br>- I know that a battery/cell has a positive and negative side.<br>- I know how to construct a simple circuit using different components.<br>- I know that conductors let heat and electricity through them.<br>- I know insulators do not let electricity through them.<br>- I can name different materials that are conductors or insulators.<br>- I know how to use a switch to turn a circuit on or off.<br>- I know how to make bulbs brighter within a circuit. | **Working Scientifically Enquiries:**<br>- Competitive tests – Which metal is the best conductor of electricity?<br>- Identify and Classify – How would you group these electrical devices based on where the electricity comes from?<br>- Observation Overtime – How long does a battery light a torch for?<br>- Research - How does a light bulb work?<br><br>**Working Scientifically Skills:**<br>- Setting up simple practical enquiries, comparative and fair tests<br>- Making systematic and careful observations and, where appropriate, taking accurate measurements<br>- Using standard units, using a range of equipment, including dataloggers.<br>- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables<br>- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.<br>- Using straightforward scientific evidence to answer questions or to support their findings.<br>- **Ongoing:** Ask their own questions about what they observe.<br>- **Ongoing:** Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. | - Why this? Pupils have the opportunity to create simple circuits and to understand the key elements of a circuit.<br>- Why now? This unit builds upon prior knowledge some understanding that some objects need electricity to work. This unit introduces electricity from a scientific perspective which will then be revisited in Upper KS2. The children will be using their understanding of what is needed to make a working circuit within their DT project which is occurring in Term 6 of this cycle. | - Electricity, electric current, electrical appliance/device, mains, plug, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component. | - Thomas Edison (First Working Lightbulb) |

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| - I know that Thomas Edison was a famous American inventor who is best known for inventing 'domestic' lightbulbs to go in houses, and the electric power system that allows them to work. | | | | |

## Upper KS2

| Knowledge | Skills | Why this? Why now? | Vocabulary | Key Scientist |
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| **Term 1- Earth and Space (Year 5 NC): Sun, Earth & Moon: What is moving and how do we know?** | | | | |
| **National Curriculum Statements:**<br>- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.<br>- Describe the movement of the Moon relative to the Earth.<br>- Describe the Sun, Earth and Moon as approximately spherical bodies.<br>- Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.<br><br>**Key learning for children:**<br>- I know the 8 planets of the solar system.<br>- I know that the Earth orbits the sun, and it takes 365 ¼ days.<br>- I know why we have a leap year.<br>- I know that the moon orbits the Earth taking 27 days.<br>- I know that the Earth spins on its axis creating day and night.<br>- I know that the Earth is tilted causing the seasons.<br>- I know the Earth orbits the sun because of the sun's gravitational pull and the Earth's natural sideways movement.<br>- I know that the scale of distance between the planets becomes greater the further away from the sun they are.<br>- I know that the length of my shadow will change throughout the day because of the sun's position in the sky.<br>- I know the different phases of the Moon.<br>- I know that Tim Peake was the first British ESA astronaut to visit the International Space Station and that during his 186 days in space, he conducted over 250 experiments. | **Working Scientifically Enquiries:**<br>- Competitive tests – How does the length of daylight hours change in each season?<br>- Observation Overtime – Can you observe and identify all the phases in the cycle of the Moon?<br>- Pattern Seeking – Is there a pattern between the size of a planet and the time it takes to travel around the Sun?<br>- Research - How have our ideas about the solar system changed over time?<br><br>**Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.<br>- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.<br>- Identifying scientific evidence that has been used to support or refute ideas or arguments.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>- **Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | - Why this? Pupils have the opportunity to find out why we have night and day by using Earth's place within the Solar System to support with this.<br>- Why now? This unit builds upon prior learning from KS1 in which children learnt about how day length varies. | - Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric. | - Tim Peake (First British ESA astronaut) |
| **Term 2 – Living Things and their Habitats (Year 5 NC): How do different living things reproduce?** | | | | |
| **National Curriculum Statements:**<br>- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.<br>- Describe the life process of reproduction in some plants and animals.<br><br>**Key learning for children:**<br>- I can describe the life cycle of a mammal (elephant).<br>- I can describe the life cycle of an amphibian (newt).<br>- I can describe the life cycle of an insect (butterfly).<br>- I can describe the life cycle of a bird (robin).<br>- I know how to describe the differences in the life cycles of different animals.<br>- I know the meaning of sexual and asexual reproduction.<br>- I know how plants reproduce asexually.<br>- I know that different animals and plants have different periods for reproduction.<br>- I know that David Attenborough is an English broadcaster, writer, and naturalist who has introduced millions of people to a variety of animals from around the world. | **Working Scientifically Enquiries:**<br>- Identify and Classify – Compare a given collection of animals based on similarities and differences in their lifecycle.<br>- Observation Overtime –How does a bean change as it germinates?<br>- Pattern Seeking – Is there are relationship between number of petals and number of stamen?<br>- Research - What are the differences between the life cycle of an insect and a mammal?<br><br>**Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. | - Why this? Pupils have the opportunity to learn about different types of reproduction in both plants and animals.<br>- Why now? This unit builds upon prior learning about the human life cycle from KS1 Cycle B by extending this to plants and other animals. | - Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant | - David Attenborough (Naturalist and Nature Documentary Broadcaster) |

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| | - Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.<br>- Identifying scientific evidence that has been used to support or refute ideas or arguments.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>- **Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | | | |
| **Term 3 – Animals including Humans (Year 5 NC): Why and how does the human body change over time?** | | | | |
| **National Curriculum Statements:**<br>- Describe the changes as humans develop to old age.<br><br>**Key learning for children:**<br>- I know the different stages of the human life cycle.<br>- I know how our body changes as we grow older.<br>- I know how bodies change during puberty.<br>- I know that boys and girls go through similar and different changes.<br>- I know how to keep clean during puberty.<br>- I know that a human's baby takes 40 weeks to develop in the womb.<br>- I know that different animals have different gestation periods than humans.<br>- I know that Dr Steve Jones is a geneticist and a leading science communicator on evolution and genetics.<br>- I know that Dr Steve Jones has examined the relationship between habitat and genetic traits such as variation in snail shell colour. | **Working Scientifically Enquiries:**<br>- Competitive tests – How does age affect a human's reaction time? Who grows the fastest, girls or boys?<br>- Identify and Classify – Can you identify all the stages in the human life cycle?<br>- Observation Overtime – How do different animal embryos change?<br>- Research - Why do people get grey/white hair when they get older?<br><br>**Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.<br>- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br>- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br>- Using test results to make predictions to set up further comparative and fair tests.<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>- **Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | - Why this? Pupils have the opportunity to describe the changes that occur to humans as they develop to old age.<br>- Why now? This unit builds upon prior learning which has been focused on life cycles from Animals, including humans from across KS1 and Lower KS2 | - Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional | - Dr Steve Jones (Geneticist) |
| **Term 4 – Materials: Changes (Year 5 NC): How can we change materials reversibly and irreversibly?** | | | | |
| **National Curriculum Statements:**<br>- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.<br>- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.<br>- Demonstrate that dissolving, mixing and changes of state are reversible changes. | **Working Scientifically Enquiries:**<br>- Competitive tests – Which material rusts fastest/slowest?<br>- Identify and Classify – Can you identify and classify these reactions and changes into reversible, and irreversible?<br>- Observation Overtime – How does a nail in saltwater change over time?<br>- Pattern Seeking – What patterns can you notice in different reactions? How does the amount of bicarbonate of soda, washing up liquid and vinegar affect the reaction? | - Why this? Pupils have the opportunity to embed their learning on states of matter by looking at reversible changes, comparing and group together everyday materials based on their properties including their hardness, solubility, transparency, conductivity (electrical and thermal), and how they response to magnets. | - Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing Material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard. | - Spencer Silver and Arthur Fry (Post-It Notes) |

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| - Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda.<br><br>**Key learning for children:**<br>- I know that materials have different properties.<br>- I know that electrical conductivity allows electricity to move through an object.<br>- I know that different materials are suited to different needs.<br>- I know how to explain the properties of different materials.<br>- I can suggest which materials should be used for different purposes.<br>- I know that a reversible changes means I can get the original material back.<br>- I know that an irreversible change means you cannot get the original material back.<br>I know that Spencer Silver was an American chemist and inventor who specialised in adhesives. He invented the adhesive that Arthur Fry used to create Post-it Notes. | **Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.<br>- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br>- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>**Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | - Why now? This unit provides the opportunity to embed all previous learning on materials, uses of materials and states of matter from across the curriculum. | | |
| **Term 5 – Materials: Mixtures and Separations (Year 5 NC): How do we separate materials?** | | | | |
| **National Curriculum Statements:**<br>- Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.<br>- Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.<br><br>**Key learning for children:**<br>- I know that everything is made up of particles.<br>- I know how particles are ordered differently in solids, liquids and gases.<br>- I know how to perform an experiment to separate materials.<br>- I know that I can separate materials using filtering, sieving and evaporating.<br>- I know that when a substance dissolves it is still there even though we can't see it.<br>- I know that when two substances form together it is called a solution.<br>- I know that new materials can be formed by mixing two substances together.<br>- I know that Ruth Benerito was an American chemist and is best known for developing wrinkle-free cotton fabric. | **Working Scientifically Enquiries:**<br>- Competitive tests – How does the temperature of tea affect how long it takes for a sugar cube to dissolve?<br>- Observation Overtime – How does a container of saltwater change over time?<br>- Pattern Seeking – Do all stretchy materials stretch in the same way?<br>- Research - What are microplastics and why are they harming the planet?<br><br>**Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.<br>- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.<br>- Identifying scientific evidence that has been used to support or refute ideas or arguments.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>- **Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | - Why this? Pupils have the opportunity to explore and compare the properties of a broad range of materials, how to separate materials and exploring the water cycle in more depth.<br>- Why now? This unit builds upon learning about prior learning about the water cycle from the Lower KS2 Connections curriculum as well as on states of matter from Lower KS2 Cycle B | - Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection, | - Ruth Benerito (Wrinkle-Free Cotton) |
| **Term 6 – Forces and Magnets (Year 5 NC): How and why do objects move?** | | | | |
| **National Curriculum Statements:**<br>- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives.<br>- Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. | **Working Scientifically Enquiries:**<br>- Identify and Classify – Can you label and name all the forces acting on the objects in each of these situations?<br>- Observation Overtime – How long does a pendulum swing for, before it stops? | - Why this? Pupils have the opportunity to explore the effects of water and air resistance, the force of gravity and recognising that some mechanisms allow a | - Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley. | - Isaac Newton (Gravitation) |

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| - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.<br><br>**Key learning for children:**<br>- I know that gravity is always acting on us.<br>- I know that gravity is a force pulling an object towards the centre of the Earth.<br>- I know that force is measured in newtons.<br>- I know that centripetal force acts on objects moving in a circular motion.<br>- I know that air resistance works in the opposite direction to which an object is moving.<br>- I understand that the greater the surface area the more air resistance there will be.<br>- I know that friction prevents an object from moving across a<br>- surface.<br>- I know that the smoother the surface the less friction there is.<br>- I know that water resistance acts in the same way in water as air resistance in air.<br>- I know there are 3 main types of a lever and the differences between a first-, second-and third-class lever.<br>- I know how to move heavier objects using a lever.<br>- I know that Isaac Newton was born at a time when the laws of nature were a mystery. He studied maths and physics and is perhaps best known for discovering gravity. | - Pattern Seeking – Do all objects fall through water in the same way? How does the surface area of a parachute affect the time it takes to fall?<br><br>**Working Scientifically Skills:**<br>- Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.<br>- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br>- Using test results to make predictions to set up further comparative and fair tests.<br>- **Ongoing:** Ask their own questions about scientific phenomena<br>- **Ongoing:** Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | smaller force to have a greater effect.<br>- Why now? This unit builds upon prior learning from Lower KS2 Cycle B on Forces and Magnets where they explored magnetism and friction. | | |